2004

PATENT ATTORNEYS

EXAMINATION

PAPER D

The Preparation of Specifications for
New Zealand Patents

Regulation 158 (1) (d)

Duration: 4 hours (plus 10 minutes for reading)

Question 1 has a possible 40 marks
Question 2 has a possible 60 marks

Question 1

Your client is a timber processing company. The company operates a number of sawmills at which logs are debarked and then sawn into timber for sale. The company's General Manager tells you that, to prevent decay, timber preservative compositions are commonly applied to the sawn timber by dipping the timber into a bath comprising a solution of the preservative composition. The timber must remain submerged in the bath for sufficient time, typically a half hour or more, for the liquid preservative chemical to diffuse into the timber. As a result the process is relatively time consuming and labour intensive.

The General Manager tells you that the company has developed a new process which is suitable for application of many commonly used preservative chemicals to timber. The process is faster and does not require the level of maintenance that a bath of preservative composition does. As the sawn timber can be treated in batches, economies of scale can be achieved so the process is commercially very viable.

In the new process, batches of sawn timber are stacked in a closed vessel. Each layer of timber pieces is separated from the layer below by spacer strips so that the maximum surface area of each timber piece is exposed. Then the vessel is closed and a preservative chemical in vapour or gas form is released into the interior of the treatment vessel through a valve. The valve connection is a standard type.

The interior of the treatment vessel is then pressurised to between 10 and 30 psi (above atmospheric pressure) for a short period, typically a few minutes, to force the vapour or gas into the timber.

To form the vapour or gas, the treatment chemical is separately heated to a temperature above its boiling point in a smaller enclosed vessel which is then connected via a valve to the treatment vessel.

The General Manager says that the new process is most effective when, before applying pressure, the treatment vessel containing the sawn timber is evacuated of air (ie, a vacuum, or partial vacuum, is created within the interior of the treatment vessel). Apparently, this draws air out of the cellular structure of the timber as well as from voids or spaces in the timber. When the vapour or gas of the preservative chemical is then released into the vessel, and the

interior of the vessel pressurised, the gas or vapour can then more easily penetrate into the timber.

During a discussion with the General Manager about the new process (which has been trialled experimentally only, and has not yet been used commercially), you ask whether the client is aware of any prior timber treatment process in which the timber is impregnated with a preservative chemical in a gaseous form, as opposed to being dipped in a liquid bath or similar. the General Manager tells you that one of the company's competitors trialled a similar process some years ago, but unsuccessfully.

In the competitor's process, the timber was exposed to a gas/vapour of the preservative chemical in a treatment chamber, but without any prior evacuation or pressurisation of the treatment chamber. The General Manager tells you that the amount of uptake of preservative chemical by the timber was insufficient in the competitor's process. He knows this because he recalls reading an article describing the competitor's process that was published in a NZ trade magazine at the time. The magazine circulates widely within the NZ timber processing industry. The article stated that the degree of uptake of the preservative chemical into the timber was insufficient to make the treated timber viable for general commercial use. The uptake was not sufficient for the timber to be used in building framing and certainly not for the timber to be used in ground contact applications which have a higher chemical uptake requirement, as timber is more prone to decay when in contact with the ground. The article also stated that, in the competitor's trials, the timber was exposed to the preservative chemical gas/vapour in a long tunnel open at either end. As the timber passed through this long tunnel on a conveyor and was exposed to the preservative gas/vapour, it remained at atmospheric pressure.

The General Manager points out that the trials of the new process have met the industry standard requirement for uptake of the preservative chemical into timber for building framing.

The General Manager also tells you that in the first experimental runs of the new process described above, the sawn timber had first been dried to a moisture content about 15% by weight of the dried timber, before being placed in the treatment vessel. This is relatively standard in the industry. Sawn timber is ordinarily dried to a moisture content of about 15% by weight before using the standard dipping process for example. In the company's latest experimental runs the timber was first dried to a moisture content below 10% by weight. This substantially increased the uptake of the preservative chemical into the timber. The General

Manager says that when the additional drying step (to less than 10% moisture content by weight) is used, sufficient preservative uptake into the timber is achieved to also meet the higher industry standard requirement for ground contact applications (where the timber is more prone to decay than in building framing applications). This was the case whether or not the treatment vessel was first evacuated of air (although evacuation again markedly increased chemical uptake).

You ask the General Manager to try and locate a copy of the article about the competitor's process. In the meantime you must begin work on a provisional patent specification as the company is about to disclose details of the new process, and the experimental work completed to date, to one of its major customers in support of a tender to retain that customer's business. The General Manager tells you that the company cannot delay this for more than one week.

Before beginning work on preparing the provisional specification you make a patent search but locate nothing relevant. You consider that the trade article, which you have not seen, but which the client has described to you, is the closest prior art of which you are aware.

The General Manager provides you with a flow chart marked "Flow Chart – Question 1" which he says shows the process steps the company will use in preservative treatment of timber for ground contact applications. Two copies of the flow chart are attached.

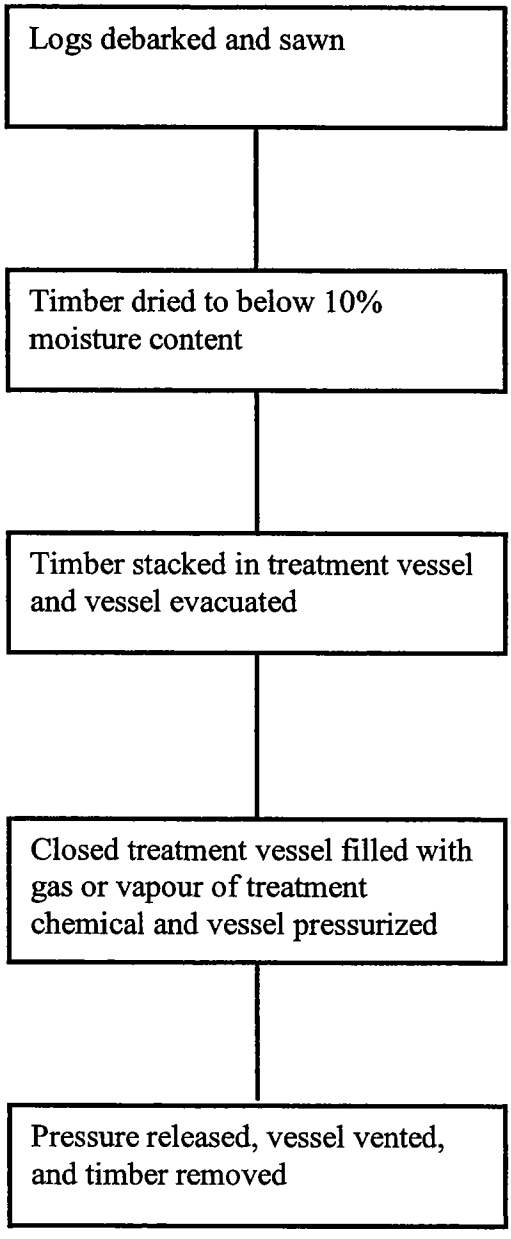
Based on the above information, prepare a draft provisional patent specification for review by your client before filing in New Zealand. The specification should maximise the options for protecting the company's development(s) at a later stage by filing a single complete-after-provisional specification. You may use one copy of the flow chart in your provisional specification if you wish to do so.

Also briefly indicate any other technical information you would request from your client for addition to your draft provisional specification before filing the patent application.

(40 marks)

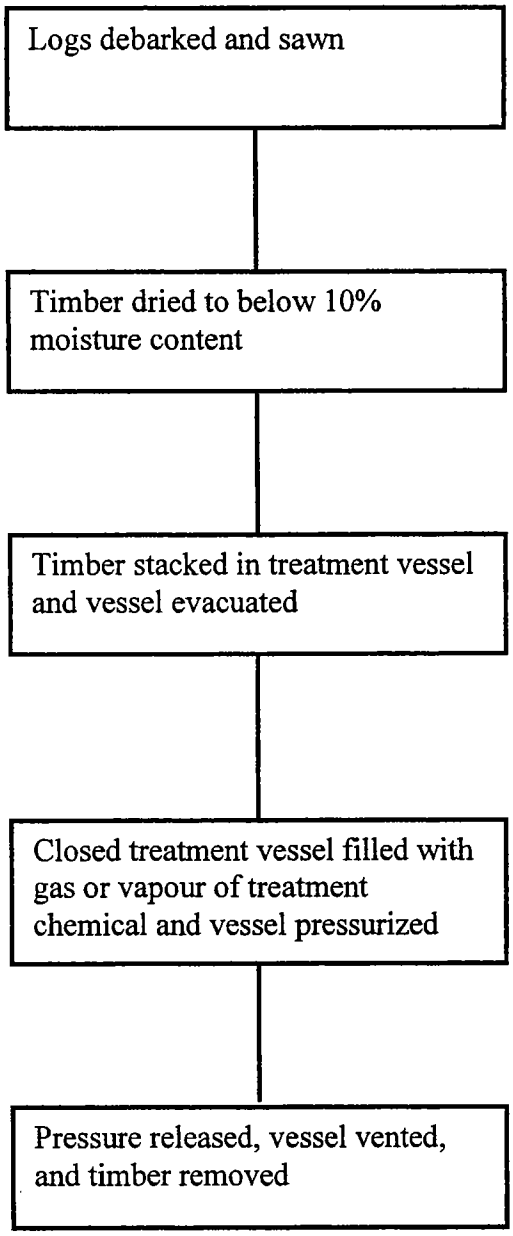
Flow Chart - Question 1

Process Steps for Ground Contact Applications



Flow Chart - Question 1

Process Steps for Ground Contact Applications



Question 2

Eleven months ago a patent application accompanied by a provisional specification for an improved wheelbarrow was filed by an Auckland inventor who owns a small company which manufactures wheelbarrows. Two copies of the provisional specification and drawings of the patent application, as filed, are attached marked "Provisional Specification – Question 2" (the second copy is for your use in submitting your answer – see the end of this Question 2).

The inventor now consults you in relation to her patent application. During an initial meeting she says that since filing the patent application she has seen another wheelbarrow for sale in a number of shops in Christchurch. A picture of this known wheelbarrow is attached marked "Prior Art – Question 2". Your new client points out that this wheelbarrow has slightly smaller wheels than the front wheels, mounted at the bottom of each of the two back legs of the wheelbarrow. She also points out its oddly shaped arms. She says that arms of that shape are not ideal as they only have a short handle or gripping area. This is the short horizontal portion at the end of the arms. If the arms were straight (or straighter) it would allow a user to use more of the arms as a gripping area if needed. She has ascertained that this wheelbarrow has been on sale since before the filing date of her provisional patent application.

Your client also tells you that she has shown a pre-production sample of her wheelbarrow with larger rear wheels than front wheels at a couple of trade fairs over the last few weeks and there has been considerable interest. As a result, next week she is meeting with a representative of a major garden centre retail chain that expressed interest, and is hopeful of obtaining an order for a production run of this wheelbarrow. She would like at least to continue with her patent application in relation to this version of her wheelbarrow because it is a considerable advantage that the larger rear wheels make the wheelbarrow easier to tip up when full, of soil for example.

Your client then informs you that she has devised an adaptation which can be used in place of the standard handles shown in her provisional specification, and provides you with drawings of two versions of this adaptation (two copies are attached marked "Client's Handle Improvement - Question 2"). She says that the loop shape of these handles allows a user to easily move his or her hand grip around the handles on the ends of the wheelbarrow arms in use. This further increases the ease of tipping the load out of the wheelbarrow and also increases the ease of use of the wheelbarrow for people of different heights.

She points out that the shape of the handles shown in the drawings is preferred, but that other looped shapes could also be possible. She also explains that it is not necessary for the loop to close but it does need to loop back and finish reasonably close to the linear portion of the arm.

Your client also says that her new handle adaptation feature could tip the scales in her discussions next week with her prospective customer. She believes that it will certainly be an important part of her manufactured product and she wants it covered in her patent application. Obviously the adaptation could be used with standard wheelbarrows as well (as shown in the lowermost drawing in the sheet marked "Client's Handle Improvement – Question 2") but she does not want to incur the cost of filing a separate patent application at this stage.

At this stage your client only wants to continue with a single patent application with claims to cover her various options. She may consider filing a divisional application at a later date if warranted at that time.

Prepare a complete-after-provisional specification for your client's patent application including the following:

(a) a set of claims,

(b) an introductory section under the headings "Field of the Invention", "Background Art" and "Object of the Invention", and

(c) the rest of the disclosure of the complete specification. Should you wish to do so you may do this at least in part by taking the "Figures" and "Detailed Description of Preferred Embodiments" sections from the attached provisional specification (Provisional Specification – Question 2). However if you consider that any changes to these parts of the provisional specification should be made before incorporation into the complete specification, please make these changes in clear handwriting on the second copy of the provisional specification provided with this question paper and return those pages with your answer paper. Write any additional description that you may consider should be added to the specification, on separate new pages of your answer paper. Assemble all of the pages of your complete specification, both handwritten and from the second copy of the provisional specification (if used) into

the correct order. You may also use one of the two drawing pages labelled "Client's Handle Improvement – Question 2" in your complete specification if you wish to do so.

(60 marks)

Provisional Specification – Question 2

Title

An Improved Wheelbarrow

Field of the Invention

The invention relates to an improved wheelbarrow and in particular to a wheelbarrow which, when carrying a load, is easier to push.

Background Art

Wheelbarrows have been known for many years. They usually have one, or perhaps two, wheels on the front axle and a pair of legs at the back on which the weight of the wheelbarrow will rest when not in movement. The two front-wheeled version can be used to increase the stability of the wheelbarrow and is usually included, but not necessarily so, when the wheelbarrow will be used to carry heavy loads. The problem is that when the wheelbarrow is full, the user bears much (not all) of the weight of the load when moving the wheelbarrow from one place to another.

Summary of the Invention

In general terms, the invention provides a wheelbarrow with rear wheels.

Figures

Figures 1, 2 and 3 show a preferred form of the invention.

Detailed Description of Preferred Embodiments

Referring first to the preferred form of the invention shown in Figure 1, a wheelbarrow 10 is shown that includes a tray 18 having a base 23 and sides 21. The sides 21 of a top rim 19. The tray 18 has an overall triangular shape with the front being rounded and the back being straight.

The wheelbarrow 10 includes straight arms 12, 14 which terminate in hand grips 16A and 16B. Arms 12, 14 are connected at one end by connector 24.

The wheelbarrow 10 as a single forward wheel 26 having an axle 35 passing therethrough. Axle 35, as seen in Figure 1, also passes through arms 12, 14 and a vertical support struts 20, 22. Forward support struts 20, 22 are positioned to support the front, rounded, end of tray 18.

Wheelbarrow 10 has two spaced apart rear wheels 28, 30 (rear wheel 30 being partially obscured in Figure 1). Axle 32 connector rear wheels 28, 30. Rear support struts 42A and 42B are positioned to support the main portion of tray 18 via arms 12, 14.

With reference to Figure 2 the position of hand grips 16A (and 16B obscured in Figure 2) relative to a user 50 can be seen. The connection between rear support struts 42A and 42B and arms 12 (and 14 obscured in Figure 2) is via rivets 46, 48. A similar arrangement will be present on the obscured side of wheelbarrow 10. As can be seen in Figure 2, arms 12 and 14 will lie beneath tray 18. The support provided by rear support struts 42A and 42B for the main portion 38 of tray 18, and the support provided by forward support struts 22 (20 obscured in Figure 2) for forward portion 36 of tray 18, is apparent.

Also clear from Figure 2, is the increased size of rear wheels 28, 30 in comparison to forward wheel 26. This increased rear wheel size allows for increased ease of tipping a load out of tray 18 in a forward manner over axle 35. The preferred minimum size ratio of the rear wheels to the front wheel is 60:40 but it should not extend to a ratio greater than 80:20 as then the load in tray 18 will be moved too far forward and will impact on the ease of moving the wheelbarrow 10 as there will be too much weight over forward wheel 26. Provided the ratio is keep within the stated range, the user will be able to move relatively heavy loads without needing to physically raise the load from the ground. The size of the rear wheels and front wheel, or wheels, could be the same and this would provide the advantage of being able to move loads without lifting the wheelbarrow 10. There would be little or no advantage in the ease of tipping loads from the wheelbarrow 10 however. Alternatively again the rear wheels could be smaller than the front wheel(s), and could be in the form of rollers on the ends of the rear legs of the wheelbarrow.

As will be readily apparent, there could be two forward wheels. In such a case the wheels would be positioned immediately adjacent one another and would lie together on axle 35 and

preferably within arms 12, 14 (much as shown with the single wheel 26 best seen in Figures 1 and 3). The use of straight arms 12, 14 is very much preferred as this allows some latitude to the user to position the hands at a position on the arms that suits the height of the user. The position of the hand grips 16A and 16B relative to the ground will ordinarily be at approximately waist height for an average user (50 as seen in Figure 2). For a person of shorter stature, gripping arms 12, 14 further toward tray 18 will be an option.

With reference to Figure 3 the position of arms 12, 14 relative to tray 18 (shown in phantom outline in Figure 3) can be seen. Also apparent is the convergent nature of arms 12, 14 toward front wheel 26. The positioning of the wheels 26, 28, 30, relative to tray 18 is also apparent. As can be seen, the wheels 26, 28, and 30 are also positioned in a substantially triangular manner in order to spread the load carried by tray 18 in the most efficient manner.

As would be readily apparent to a skilled person, the wheelbarrow 10 can be made up of any suitable materials. The tray 18 can be made out of a suitably resilient plastics material or could be made out of steel, aluminium or like materials.

The foregoing describes the invention including a preferred form thereof. Alterations or modifications as would be readily apparent to a person skilled in this art are intended to be included within the scope of the invention described.

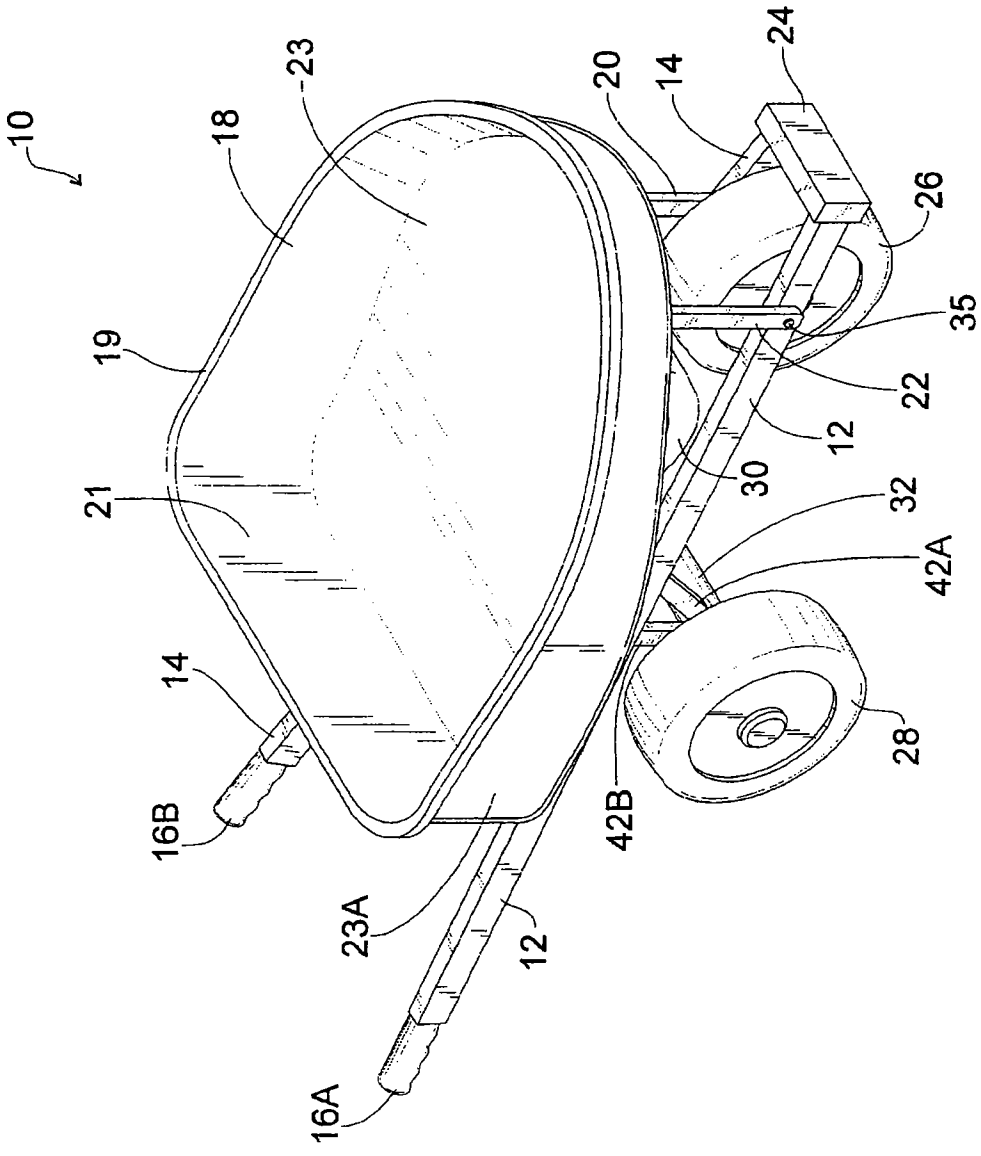


Fig. 1

Provisional Figure - Question 2

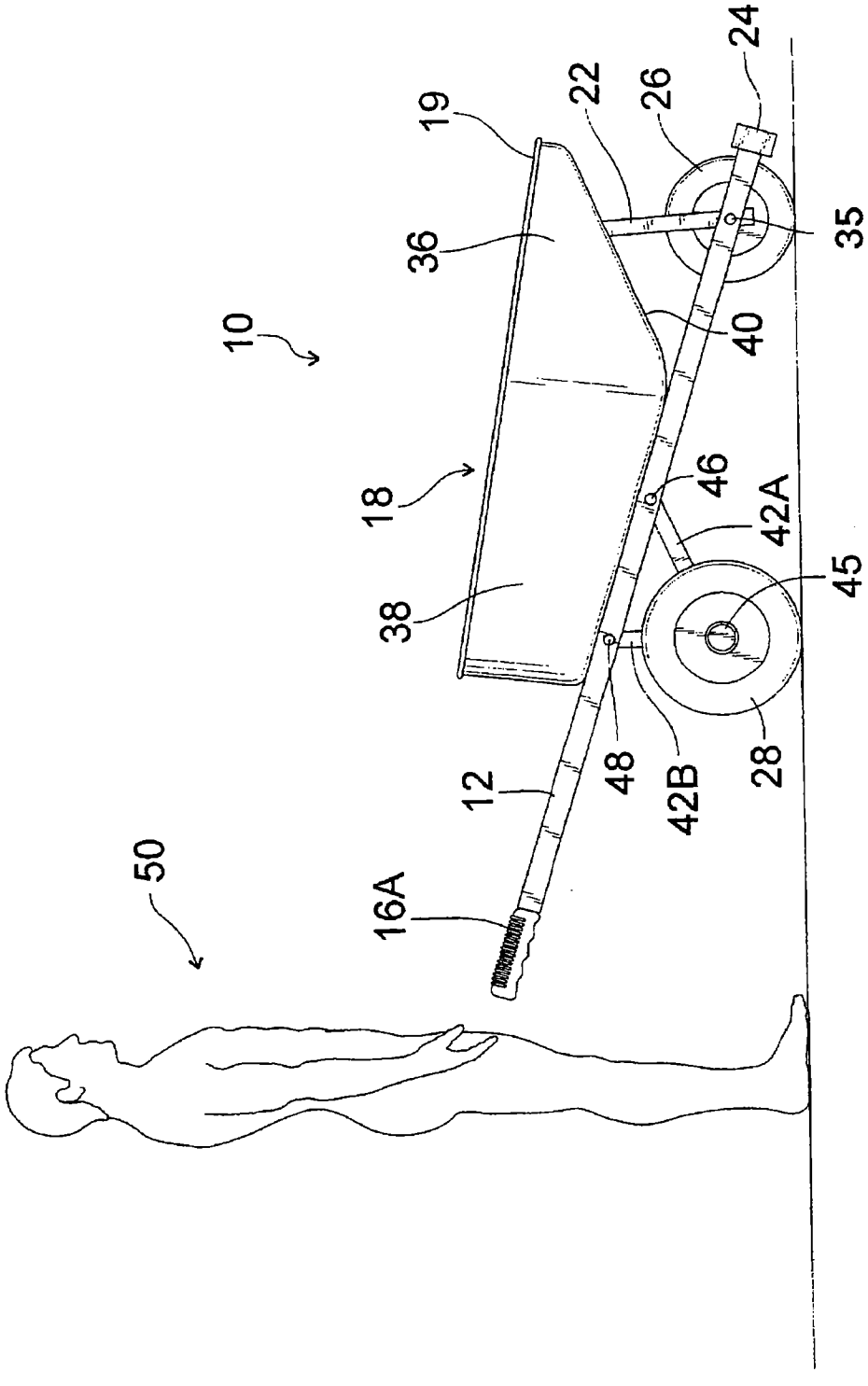


Fig. 2

Provisional Figure - Question 2

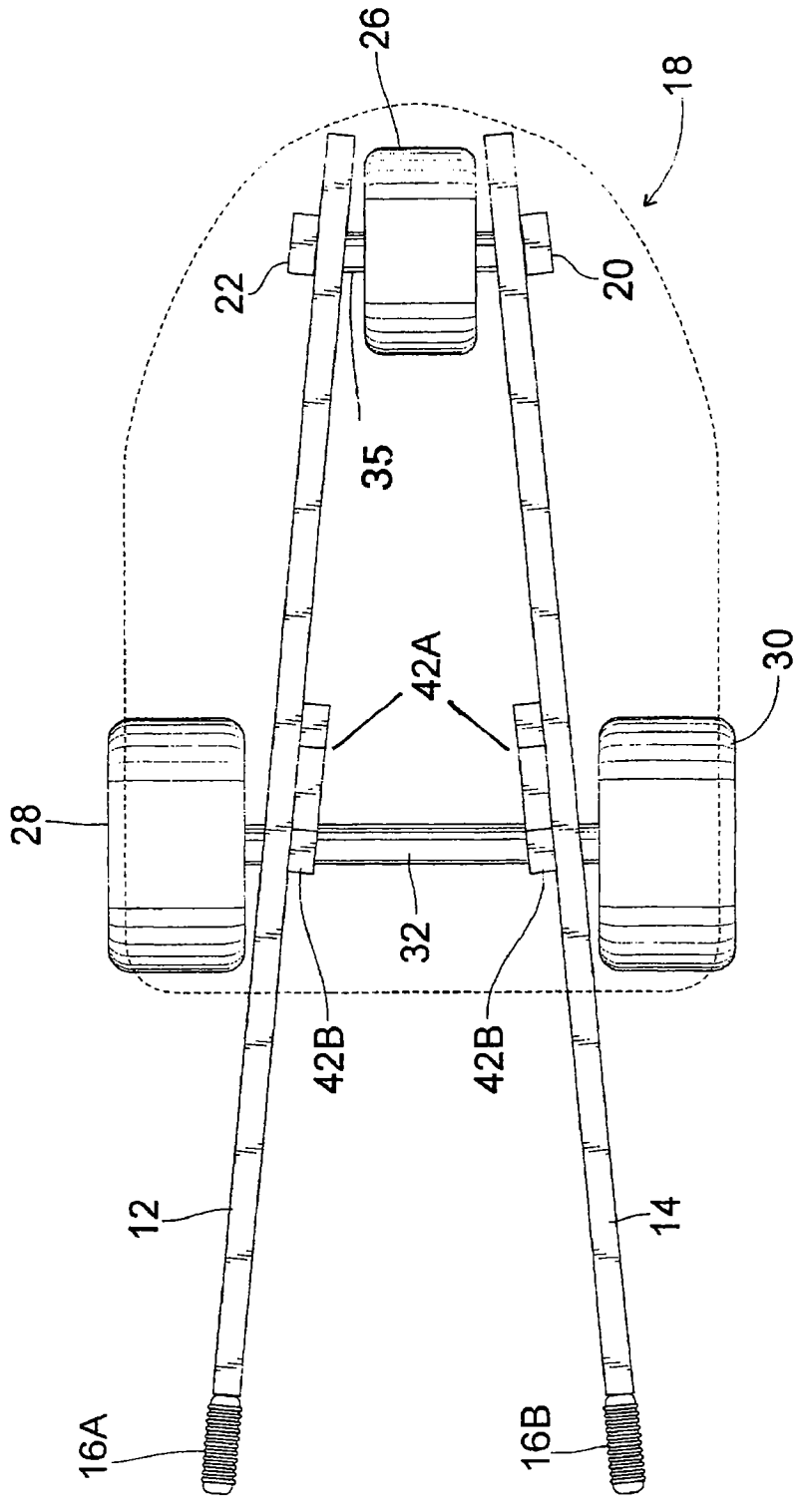


Fig. 3

Provisional Figure - Question 2

Provisional Specification – Question 2

Title

An Improved Wheelbarrow

Field of the Invention

The invention relates to an improved wheelbarrow and in particular to a wheelbarrow which, when carrying a load, is easier to push.

Background Art

Wheelbarrows have been known for many years. They usually have one, or perhaps two, wheels on the front axle and a pair of legs at the back on which the weight of the wheelbarrow will rest when not in movement. The two front-wheeled version can be used to increase the stability of the wheelbarrow and is usually included, but not necessarily so, when the wheelbarrow will be used to carry heavy loads. The problem is that when the wheelbarrow is full, the user bears much (not all) of the weight of the load when moving the wheelbarrow from one place to another.

Summary of the Invention

In general terms, the invention provides a wheelbarrow with rear wheels.

Figures

Figures 1, 2 and 3 show a preferred form of the invention.

Detailed Description of Preferred Embodiments

Referring first to the preferred form of the invention shown in Figure 1, a wheelbarrow 10 is shown that includes a tray 18 having a base 23 and sides 21. The sides 21 of a top rim 19. The tray 18 has an overall triangular shape with the front being rounded and the back being straight.

The wheelbarrow 10 includes straight arms 12, 14 which terminate in hand grips 16A and 16B. Arms 12, 14 are connected at one end by connector 24.

The wheelbarrow 10 as a single forward wheel 26 having an axle 35 passing therethrough. Axle 35, as seen in Figure 1, also passes through arms 12, 14 and a vertical support struts 20, 22. Forward support struts 20, 22 are positioned to support the front, rounded, end of tray 18.

Wheelbarrow 10 has two spaced apart rear wheels 28, 30 (rear wheel 30 being partially obscured in Figure 1). Axle 32 connector rear wheels 28, 30. Rear support struts 42A and 42B are positioned to support the main portion of tray 18 via arms 12, 14.

With reference to Figure 2 the position of hand grips 16A (and 16B obscured in Figure 2) relative to a user 50 can be seen. The connection between rear support struts 42A and 42B and arms 12 (and 14 obscured in Figure 2) is via rivets 46, 48. A similar arrangement will be present on the obscured side of wheelbarrow 10. As can be seen in Figure 2, arms 12 and 14 will lie beneath tray 18. The support provided by rear support struts 42A and 42B for the main portion 38 of tray 18, and the support provided by forward support struts 22 (20 obscured in Figure 2) for forward portion 36 of tray 18, is apparent.

Also clear from Figure 2, is the increased size of rear wheels 28, 30 in comparison to forward wheel 26. This increased rear wheel size allows for increased ease of tipping a load out of tray 18 in a forward manner over axle 35. The preferred minimum size ratio of the rear wheels to the front wheel is 60:40 but it should not extend to a ratio greater than 80:20 as then the load in tray 18 will be moved too far forward and will impact on the ease of moving the wheelbarrow 10 as there will be too much weight over forward wheel 26. Provided the ratio is keep within the stated range, the user will be able to move relatively heavy loads without needing to physically raise the load from the ground. The size of the rear wheels and front wheel, or wheels, could be the same and this would provide the advantage of being able to move loads without lifting the wheelbarrow 10. There would be little or no advantage in the ease of tipping loads from the wheelbarrow 10 however. Alternatively again the rear wheels could be smaller than the front wheel(s), and could be in the form of rollers on the ends of the rear legs of the wheelbarrow.

As will be readily apparent, there could be two forward wheels. In such a case the wheels would be positioned immediately adjacent one another and would lie together on axle 35 and

preferably within arms 12, 14 (much as shown with the single wheel 26 best seen in Figures 1 and 3). The use of straight arms 12, 14 is very much preferred as this allows some latitude to the user to position the hands at a position on the arms that suits the height of the user. The position of the hand grips 16A and 16B relative to the ground will ordinarily be at approximately waist height for an average user (50 as seen in Figure 2). For a person of shorter stature, gripping arms 12, 14 further toward tray 18 will be an option.

With reference to Figure 3 the position of arms 12, 14 relative to tray 18 (shown in phantom outline in Figure 3) can be seen. Also apparent is the convergent nature of arms 12, 14 toward front wheel 26. The positioning of the wheels 26, 28, 30, relative to tray 18 is also apparent. As can be seen, the wheels 26, 28, and 30 are also positioned in a substantially triangular manner in order to spread the load carried by tray 18 in the most efficient manner.

As would be readily apparent to a skilled person, the wheelbarrow 10 can be made up of any suitable materials. The tray 18 can be made out of a suitably resilient plastics material or could be made out of steel, aluminium or like materials.

The foregoing describes the invention including a preferred form thereof. Alterations or modifications as would be readily apparent to a person skilled in this art are intended to be included within the scope of the invention described.

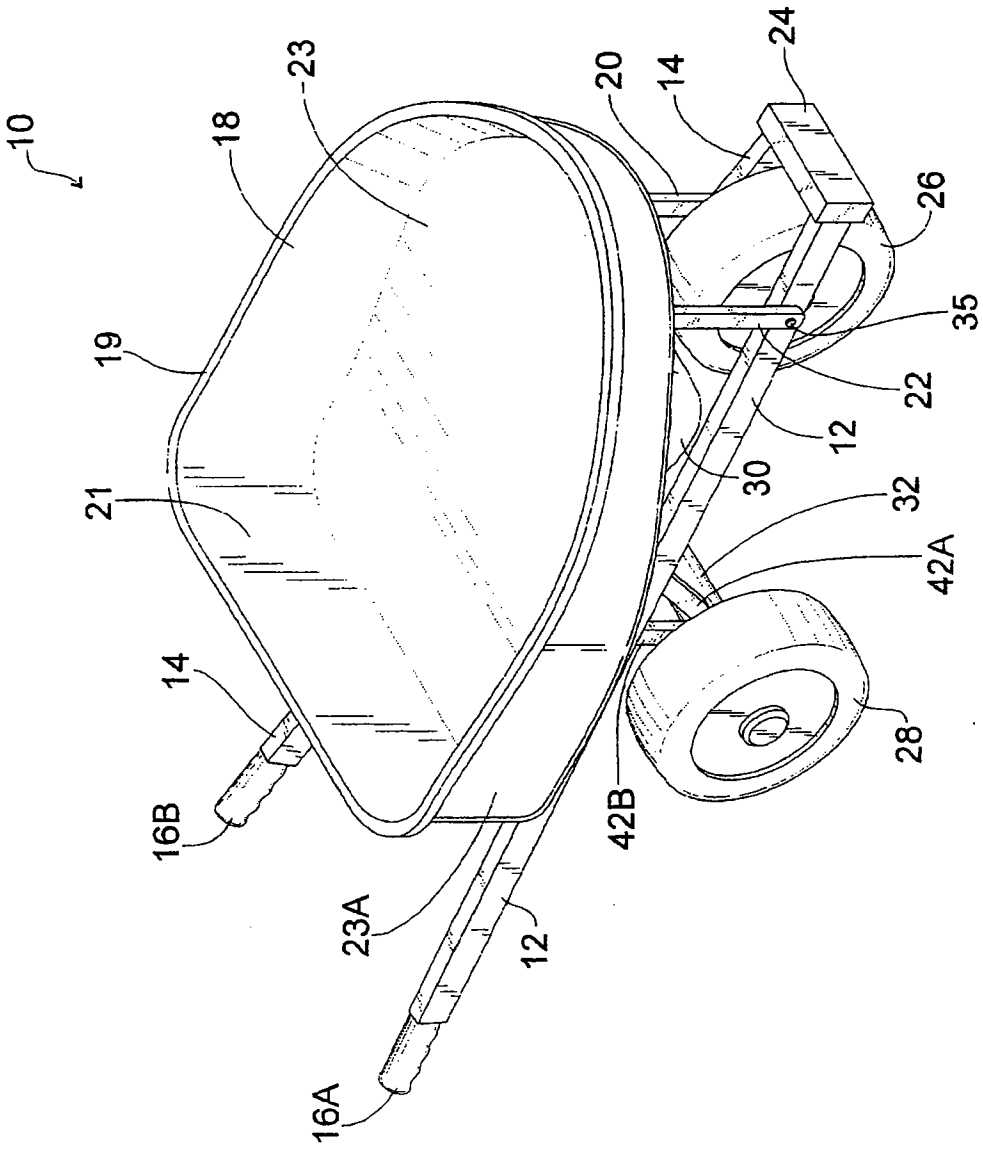


Fig. 1

Provisional Figure - Question 2

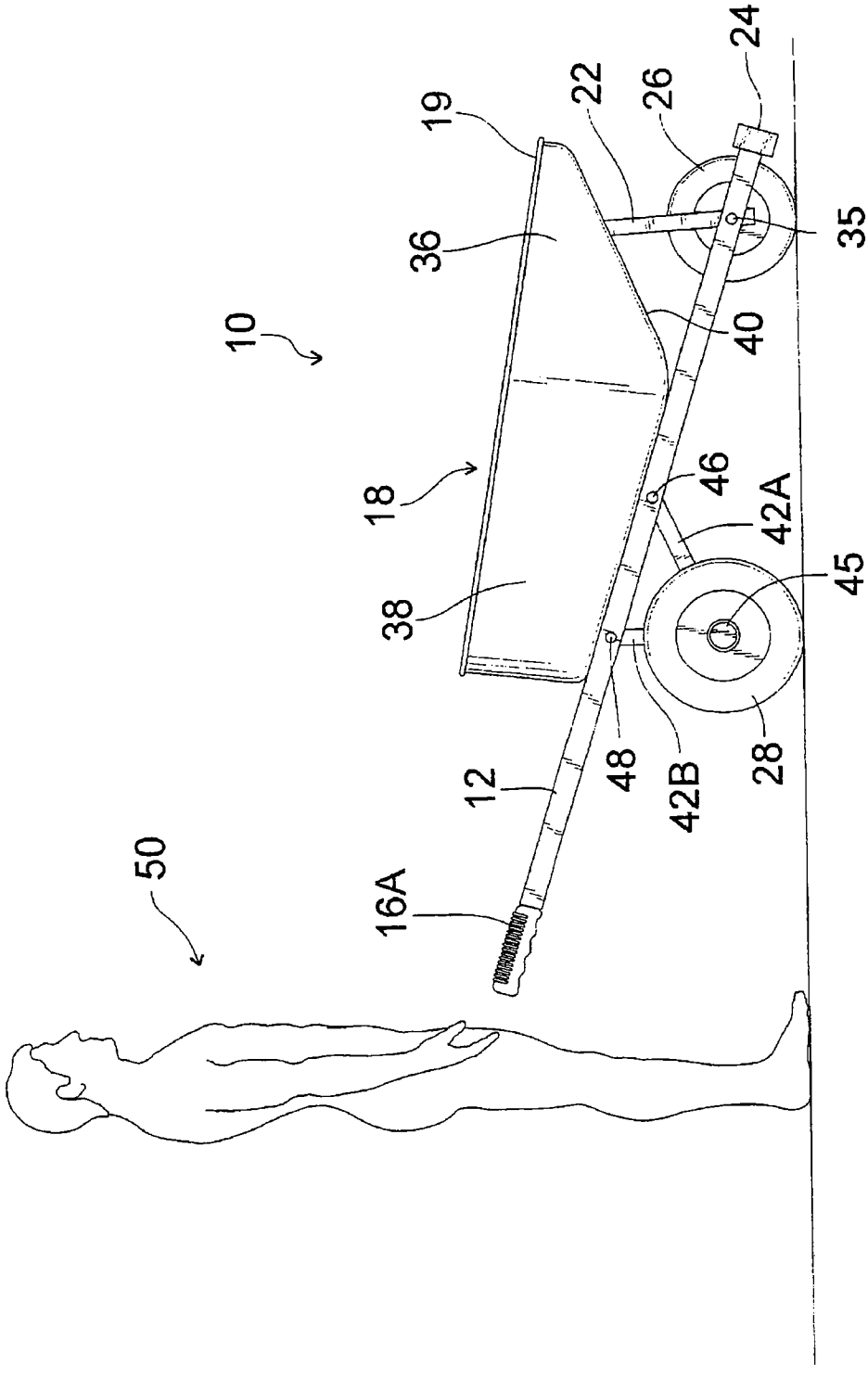


Fig. 2

Provisional Figure - Question 2

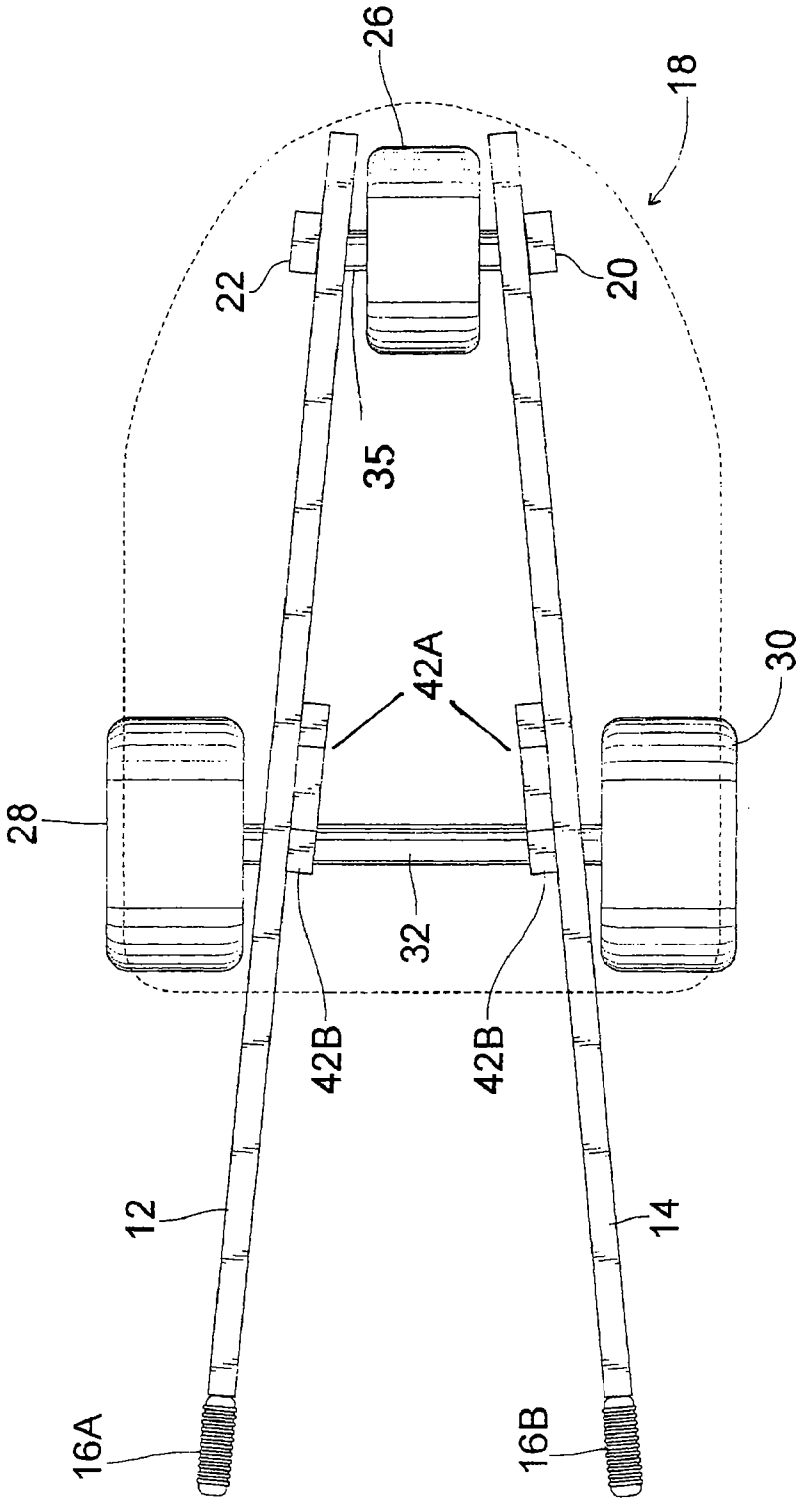
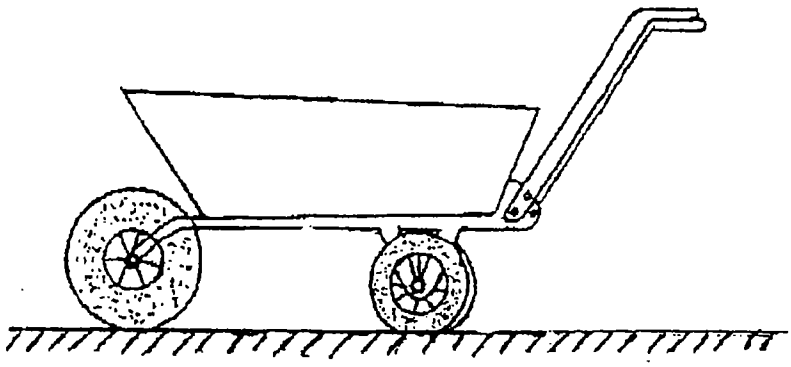


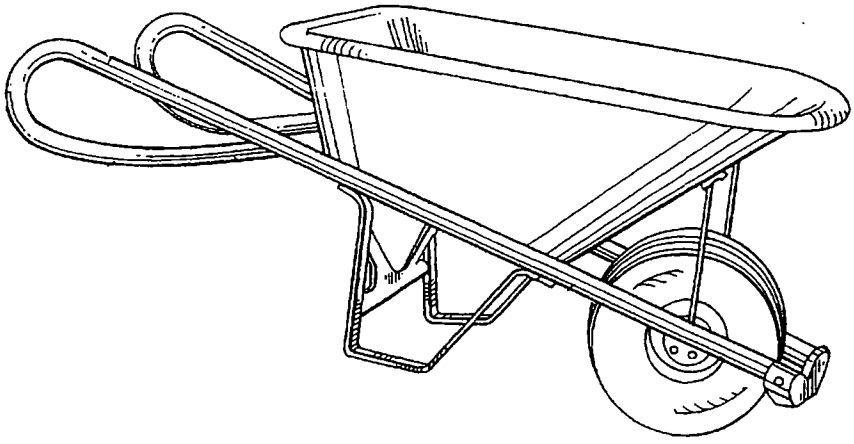
Fig. 3

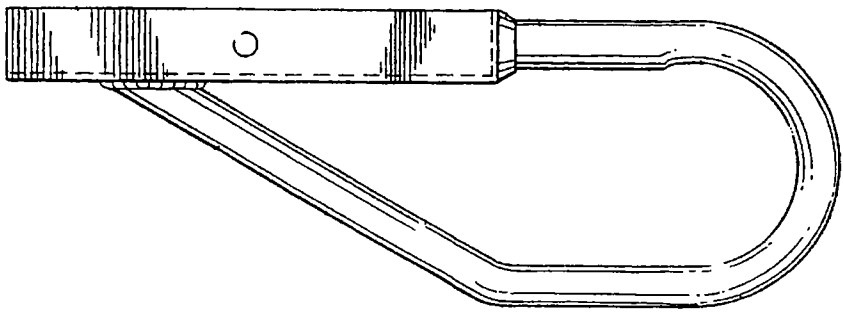
Provisional Figure - Question 2

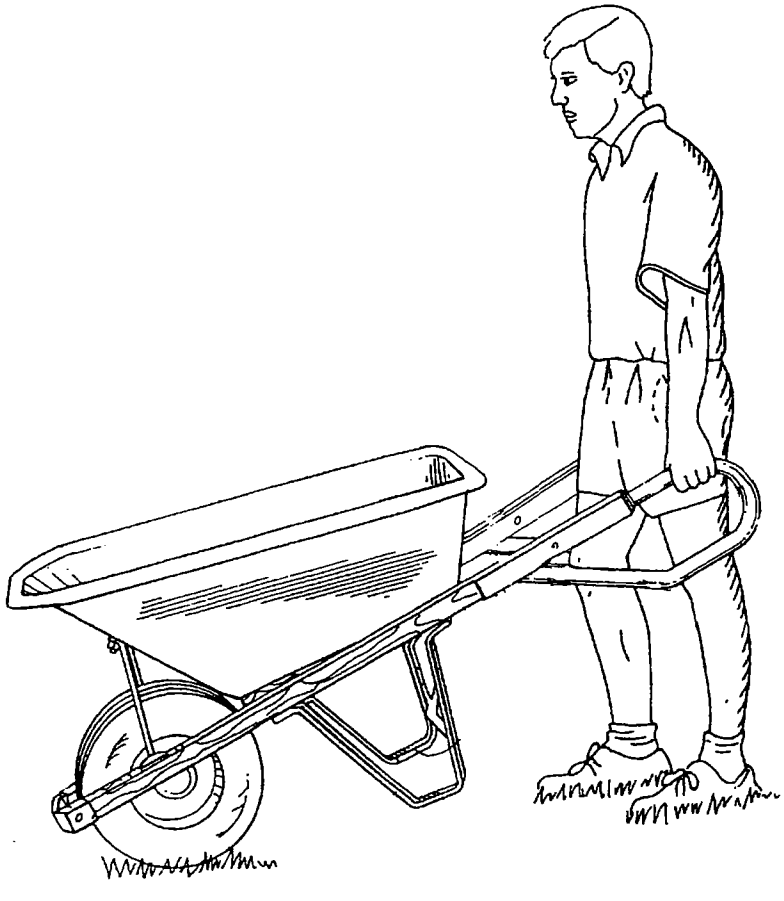


Prior Art - Question 2

Client's Handle Improvement - Question 2







Client's Handle Improvement - Question 2